

CLAIMS

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1. Use of a marker comprising an integrin alpha 10 chain or an integrin alpha 10 chain and an integrin alpha 11 chain expressed on the cell surface of a mesenchymal stem cell or intracellular in a mesenchymal stem cell as a marker for mammalian mesenchymal stem cells.
2. Use according to claim 1, wherein the integrin alpha 10 chain or the integrin alpha 10 chain and the integrin alpha 11 chain is/are expressed as a heterodimer(s) in combination with an integrin beta1 chain.
3. A method for identifying a mammalian mesenchymal stem cell, the method comprising the steps of
  - a) providing a sample comprising a mesenchymal stem cell,
  - b) detecting integrin chain alpha10 or integrin chain alpha10 and alpha11 expression on the cell surface of a mesenchymal stem cell or intracellular in a mesenchymal stem cell,
  - c) scoring the integrin chain alpha10 or integrin chain alpha10 and alpha11 expression, and
  - d) identifying the mesenchymal stem cell according to the scoring in c) above.
4. The method according to claim 3, wherein the expression in b) above is detected by detecting the integrin chain alpha10 or integrin chain alpha10 and alpha 11 protein expression.
5. The method according to claim 3, wherein the expression in b) above is detected by detecting the integrin alpha10 or the integrin alpha 10 and integrin alpha 11 mRNA expression.
6. The method according to any of claims 3-4, wherein the expression in b) above is detected by an immunoassay.
7. A method for determining whether a test compound modulates a mammalian mesenchymal stem cell differentiation, the method comprising the steps of
  - a) providing a mesenchymal stem cell that expresses integrin alpha10 or the integrin alpha 10 and integrin alpha 11
  - b) contacting the mesenchymal stem cell with a test compound, and

- c) detecting a change in rate or pattern of differentiation of the mesenchymal stem cell as an indication of that the test compound modulates a mesenchymal stem cell differentiation.
8. The method according to claim 7, wherein the rate or pattern of differentiation is detected by detecting integrin chain alpha10 or integrin alpha 10 and integrin alpha11 expression on the cell surface of said mesenchymal stem cell or intracellular in a mesenchymal stem cell according to the method in any of claims 3-6.
9. A method for producing an isolated population of mammalian cells enriched for mesenchymal stem cells relative a reference population, the method comprising the steps of
- a) providing at least a portion of a population of cells, or a portion of a reference population, comprising a mesenchymal stem cell and at least one cell other than a mesenchymal stem cells,
- b) introducing into the population of cells in a) above a compound identifying an integrin alpha 10 chain or integrin alpha 10 and integrin alpha 11 chain expressed on the cell surface of a mesenchymal stem cell or intracellular in a mesenchymal stem cell,
- c) selecting and isolating from the population of cells in b) above the mesenchymal stem cells, thereby producing a population of cells enriched for mesenchymal stem cells.
10. The method according to claim 9, wherein the mesenchymal stem cells is identified as a mesenchymal stem cell by detecting expression of integrin alpha10 or integrin alpha 10 and alpha11 chain expression on the cell surface of said mesenchymal stem cells according to the method in any of claims 3-6.
11. The method according to any of claims 9-10, wherein the selection in c) above is performed by fluorescent cell sorting.
12. An enriched mammalian cellular population of mesenchymal stem cells, comprising at least one intact, viable mesenchymal stem cell, wherein the mesenchymal stem cell are characterised by
- a) expressing an integrin alpha 10 chain or integrin alpha 10 and integrin alpha 11 chain on the cell surface of or intracellular in said mesenchymal stem cell,
- b) being substantially free from expression of molecules specific for committed

lymphohaematopoietic cells or uncommitted stem cells.

13. An isolated mammalian mesenchymal stem cell expressing a marker according to any of claims 1-2, obtainable by the method for producing a population of cells enriched for mesenchymal stem cells according to any of claims 9-10.
14. A mammalian cellular composition comprising the enriched cellular population according to claim 12, or the isolated mesenchymal stem cell according to claim 13.
15. Use of a marker according to any of claims 1-2, for identification of a mammalian mesenchymal stem cell.
16. Use of a marker according to any of claims 1-2, for modulating differentiation of a mammalian mesenchymal stem cell.
17. Use of a marker according to any of claims 1-2, for isolating a mammalian mesenchymal stem cell.